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AN ANALYSIS OF INDUSTRIAL HYGIENE ACTIVITIES IN STATE AND LOCAL HEALTH DEPARTMENTS, 1940-41¹

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Thirty years ago industrial hygiene had its national genesis when the United States Public Health Service was authorized by an act of Congress to "extend its research functions to the study and investigation of all diseases of mankind and conditions influencing the propagation and spread thereof." It received its first real impetus in the first World War when definite measures were taken toward the conservation of the workers' health in the vital war industries. Ten years ago industrial health was the concern of health departments in only three States, and the labor department in one State. Five years ago the number had increased to seventeen, and today three-fourths of the States are engaged on a more or less limited scale in rendering practical health services to industry.

This unprecedented growth of industrial hygiene resulted in part from the great demand for social security which arose from the 1929 depression. Today its progress is being further stimulated by the crisis in our national defense. Perhaps never before has the importance of activities pertaining to the physical fitness of the worker been brought on so close a parallel with that of production itself.

With the accelerated expansion of industrial hygiene activities in State and local health departments came the gradual realization that a system of uniform reporting of the progress of such activities was needed. Consequently, at the second annual meeting of the National Conference of Governmental Industrial Hygienists, held in 1939, a plan was proposed and given a trial by a number of States (1). The first report on activities of the divisions in 20 States during the fiscal year 1940 appeared in the 1941 Transactions of the Conference (2). The present report represents a second and more complete attempt to summarize industrial hygiene activities over a given period of time.

¹ From the Division of Industrial Hygiene, National Institute of Health.

SCOPE OF ACTIVITIES

At present industrial hygiene activities are being carried on in 36 States, 1 Territory, 4 cities, and 2 counties. Almost all of the units have been established within the past 5 years, five since July 1, 1941. Reports covering the activities for the fiscal year July 1940 to June 1941 have been received from industrial hygiene units in 24 States and 4 cities as follows:

State industrial hygiene divisions:

California.	Michigan.	Rhode Island.
Colorado.	Minnesota.	South Carolina.
Connecticut.	Missouri.	Texas.
Idaho.	Montana.	Utah.
Illinois.	New Hampshire.	Virginia.
Indiana.	North Carolina.	Vermont.
Iowa.	Oklahoma.	West Virginia.
Kansas.	Pennsylvania.	Wisconsin.

Local industrial hygiene divisions:

Los Angeles, Calif.	Detroit, Mich.
Baltimore, Md.	St. Louis, Mo.

The 25 States in which these divisions function are well distributed geographically over the country. They include a labor force of approximately twenty-nine and one-half million workers, more than one-half of that for the whole country.

A total of 215 persons (22 for the part-time periods), including physicians, engineers, sanitarians, a few nurses, and clerks, carried on the activities which form the basis of this report. These divisions spent slightly more than one-half million dollars for this work, representing three-fourths of the appropriations for all States with industrial hygiene units at that time.

It can be seen that, on the whole, these units are functioning with a bare nucleus of personnel and inadequate budgets. The Division of Industrial Hygiene of the National Institute of Health has been able to meet some of the demands for additional personnel by assigning trained physicians, engineers, and chemists to these States on a lease-lend basis. Although the Division had such personnel on loan in only 4 States at the end of the 1940-41 fiscal year, this number has since been increased to 36 professional persons in 19 States, the District of Columbia, and the Tennessee Valley Authority. Moreover, the Division is able to supplement the lack of adequate physical facilities by lending field and laboratory equipment. For example, in one State a program for taking chest X-rays of workers in industry has been made possible by providing the necessary equipment. A nominal fee of 25 cents per worker is paid by the company, and it is estimated that, as a result, some 50,000 workers per year can thus be benefited.

Because industrial hygiene activities cover so broad a field that no one agency can hope to do the work itself, cooperative working

relationships are established with various governmental and non-governmental agencies functioning in the States.

The present report gives a summary of industrial hygiene activities in 25 States during the fiscal year 1941, including an analysis of field investigations, and some information on laboratory activities, medical services, and educational and promotional activities. From time to time practical and illustrative examples will be given. It is not possible to mention all interesting and noteworthy activities or even to evaluate them justly. It must be sufficient in a report of this kind to mention a few, and to rely on rough analyses as an index of the extent and diversity of their activities.

THE EFFECT OF THE NATIONAL DEFENSE PROGRAM

Before proceeding with the results of the summary, some consideration must be given to the effect of the national defense program on the work of industrial hygiene divisions. In the absence of comparable peacetime data, it is not possible to estimate the extent to which the national defense program has not only stimulated but increased the work of these divisions. That the effect has been great is evidenced from individual comments on increased activities and on limitations in organization and facilities.

Already much has been said and written on conservation of manpower in industry, but much more needs to be said and done. Industrial production is increasing at so high a tempo that there is scarcely time to keep up with the many accompanying problems.

However, the State and local industrial hygiene divisions are doing all in their power to cope with the present emergency. Each division has revised its program so as to render immediate and direct service to plants producing defense materials. Lists of industries are obtained from various sources, chiefly, public contracts. Contact with these industries is frequently made by visits to the plants or through special form letters which explain the services and the facilities the divisions have to offer. When it is realized that practically every industry is concerned with war production, directly or indirectly, the magnitude of this undertaking is almost inconceivable. One State reported that if no additional contracts were let and no other major problem arose, it would require 3 to 5 years to study completely the defense industries alone. At the same time, while giving primary consideration to defense industries, routine work is not being neglected, although long-range studies have been postponed in practically all States.

The conversion and expansion of peacetime factories into establishments for the production of war materials and the construction of new factories mean that many workers are being employed in hazardous occupations before adequate control measures can be effected.

A typical example of this is found in one State having aircraft and shipbuilding industries. In this State an increased demand for mercury in the manufacture of munitions and scientific instruments has resulted in the reopening of old quicksilver mines, which began operation without the protective and control equipment necessary to prevent inhalation of mercury vapor and dust by the workers. As a result, several cases of mercury poisoning developed, prompting the industrial hygiene division to enforce preventive measures.

Frequently, because of its immediate contact with industry, the industrial hygiene division becomes the liaison agency for health problems of not only the worker but also his family. For instance, in one State the influx of new workers and their families has created health problems other than those associated with the working environment. Among these are the immunization of children, housing, food handling, and general community sanitation. The industrial hygiene division is meeting this problem by furnishing assistance to the Bureau of Communicable Diseases in having post cards, entitled "Parents Register for Health Service," distributed to employees through the managements in defense plants. In this way the families of new workers are acquainted with the various health services available in the community.

In addition to problems on occupational health hazards, there are many others which demand recognition. There is the ever-present problem of sickness not directly related to the industrial environment, which under normal conditions exacts a toll of approximately 400 million days absenteeism annually. The introduction of night and overtime work, with its attendant fatigue, the influx of new employees, crowding, and other hazards, will obviously increase the toll. Able-bodied men drawn into military service are being replaced by women, young adults, and older men. New materials and processes are being introduced, and the scarcity of less toxic substances is necessitating the substitution of toxic ones to meet the demands of production. These factors force the industrial hygienists to be on the alert and place greater responsibilities on them.

FIELD INVESTIGATIONS

The industrial plant investigation.—Of the many services rendered by State and local industrial hygiene units, only a few are capable of statistical evaluation, chief among these being field investigations. Industrial hygiene units in the 25 States reported that during the fiscal year 1941, field investigations were made in 6,084 establishments involving 1,509,797 workers. In this report, "establishment" and "worker" are used as the statistical units, although, as the analysis will reveal, a small portion of the investigations were made outside of industry.

A typical plant investigation calls for the combined efforts of the engineering, chemical, and medical personnel. Usually a preliminary survey of the plant is first made in order to obtain information on materials and processes associated with each occupation. The results are used as a guide in selecting particular occupations or operations for further study. For example, it may be necessary in an aircraft plant to study exposures to lead and zinc fumes in the foundry; silica dust at sandblasting operations; organic solvents in paint spraying and metal cleaning operations; trichlorethylene in degreasing; carbon monoxide, the mineral acids, and metallic fumes, such as chromium and cadmium in heat treating and plating operations; radioactive substances in dial painting operations; and fumes and glare during welding. Medical examinations of the workers may be indicated, including blood tests and urinalyses to determine the degree of absorption of such metals as lead and mercury; or chest X-rays of workers exposed to the siliceous or asbestos dusts may be necessary.

Physical characteristics of the workrooms are also noted, such as housekeeping practices, crowding, and safety hazards. The investigations may be extended to an evaluation of environmental conditions, such as ventilation, dampness, noise, illumination, and to provisions and practices concerning sanitation. The latter include appraisals of water supply, sewage and industrial waste disposal systems, evidence of cross connections, locker rooms, and eating facilities.

In addition to making physical examinations of the workers, the investigation may cover a study of the medical program of the plant, a subject receiving more and more consideration in industry today.

After the investigation has been made, recommendations for improvements and certain precautions to be taken during operations are offered to the management of the plant. This will also entail additional visits by the technical personnel to determine whether the recommendations have been carried out or have been properly enforced.

In brief, the investigation, as the term is used in this report, may refer to an environmental survey, an engineering study in one or more departments in the plant, or a survey of medical facilities and services. It may include one of these phases, or all three. An investigation in a small plant, covering a short period of time and requiring one or two visits at the most, received the same credit as a detailed engineering and medical evaluation of a plant employing thousands of workers, often taking months to complete and entailing laboratory analyses and medical examinations. Even the cursory inspection accomplishes a purpose, for requests are often received for revisits to assist in the control of additional hazards. Owing to the diversified nature of problems concerned with controlling health hazards in industry, no

specific, intelligible system can be worked out that will adequately describe both the extent and quality of such work.

Sources of investigation.—Table 1 presents a distinct breakdown according to the various types of investigations conducted in 3,662 establishments covering 849,385 workers. The necessary information was lacking on 660,412 workers and 2,276 plants where investigations resulted both from requests and planned programs. Because these investigations represent actual accomplishment, they are shown in this table, but are excluded from the following tabulations.

TABLE 1.—*Sources of investigations*

Source	Number		Percent	
	Establishments investigated	Workers involved	Establishments investigated	Workers involved
Total.....	6,084	1,509,797	100.0	100.0
Investigations reported in detail:.....	(3,662)	(849,385)	-----	-----
Requests.....	831	290,362	13.7	19.2
Planned program.....	2,595	535,110	42.6	35.5
Occupational disease reports.....	236	23,913	3.9	1.6
Other investigations:				
Not specified whether request or planned program ¹	2,276	660,412	37.4	43.7
Special investigations ²	146	(?)	2.4	-----

¹ Estimated on basis of previous reports; ½ resulted from requests.

² 78 resulted from requests.

³ Undetermined.

The table also shows that 146 other investigations, 78 resulting from requests, were made; the number of persons involved is indefinite. These investigations refer to air pollution studies of dusts and fumes given off in the neighborhood of industrial plants such as lead resmelting and fertilizer, compliances with other nuisance complaints, and special studies such as the revision of plans for construction of new defense plants and the installation of safety control measures.

It can be conservatively estimated, however, on the basis of previous and present reports from the two States which submitted incomplete reports on part of their activities, that of the 6,084 investigations, 27 percent resulted from requests, 69 percent from planned programs, and 4 percent from occupational disease reports.

An analysis of the sources of requests for the 831 investigations for which the necessary information was given shows 48 percent were made at the request of the plant management. Labor unions and employees accounted for 17 percent, labor departments within the States for 11 percent, and industrial commissions for 5 percent. This analysis indicates that 33 percent of the requests were made by labor and official labor organizations; the requests coming from industry itself increase the percentage to 81. Of the remaining 19 percent of the requests, 10 percent were made by State and local health departments while 9 percent were distributed among the State officials in

other than health departments, Federal agencies, insurance carriers, physicians, and residents.

The data reflect recognition on the part of industry and labor of the existence of potential health hazards, and a desire to evaluate and control them. In fact many of the studies were made in response to requests from management for technical services, such as quantitative determinations of dusts, gases, fumes, or mists, or the investigation of some particular condition suspected of being a potential hazard.

Extended studies, too, were often the outgrowth of requests. In one State such a study resulted from a request by a physician for information concerning 50 cases of dermatitis caused by wearing nylon hose. As a result, medical and environmental studies in cooperation with the National Institute of Health were made in four plants manufacturing hosiery. It was found that the finish used in the process was responsible for the dermatitis. A less toxic finish was substituted, benefiting not only the workers coming in contact with the substance but also the wearers of the hose.

In another State an interesting dust study was made as the result of a petition from residents of an area where surface dust was considered a health hazard. Some 10,000 residents were concerned, and in the course of the study some 600 physical examinations were made in cooperation with the local county health department.

The second source refers to investigations made as part of a planned program. The investigations, initiated by the agency itself, are usually long range studies of specific hazards in particular industries, such as carbon monoxide in garages, solvents in dry cleaning shops, evaluation of first aid facilities or nursing services. Such investigations are conducted by the agency itself or in cooperation with other interested agencies.

It has been estimated that 69 percent of all the investigations made were of this kind. Programs for promotional activities among the units are constantly expanding and as time goes on it is reasonable to suppose that self-initiated studies will decrease as more requests are received for industrial hygiene services. The past year, however, has been exceptional in this respect despite the growth of promotional activities in a number of States. Several factors have influenced the divisions to take the initiative. Some mention has already been made of the defense programs, which call for investigation of all plants with government contracts. Furthermore, increased production is giving rise to many problems with which the divisions are more likely to be familiar than the plant, because of their contact with research activities. The division of industrial hygiene is the technical agency to furnish such assistance, and must be on the alert for potential hazards.

The engineering and medical survey of a large shipbuilding yard in one of the States and the study of occupational skin hazards in the aircraft industry in another State are examples of planned program investigations. In the latter study, 9 aircraft plants employing 87,000 workers were involved. Both studies were made with the cooperation of National Institute of Health personnel.

In one State, a study of 59 establishments manufacturing felt hats was conducted to determine the extent to which noncarrotted mercury fur was being used. Samples of all carrotting solutions were taken for analysis. From the data secured it was found that fur felt hats were being manufactured successfully with nonmercurial carrotting solutions, and that nonmercury carrotting solutions were being used in most of the fur preparation plants. These studies finally led to the adoption by many States of rules and regulations prohibiting the use of mercury solutions in the carrotting of hatters' fur.

The third source of investigation mentioned is occupational disease reports. Four percent, or 236 of all the investigations, were of this type and affected 23,913 workers. Ten States made reports on such investigations. Other States have reported the completion of plans for inaugurating occupational disease reporting, but on the whole this type of activity is in the early stages of development.

There are various reasons for this state of affairs. To begin with, only approximately half of the States require reporting of occupational diseases, and even in those States where the physician is paid to report such diseases, the reporting has not been found satisfactory. The situation is almost hopeless in States in which the report of the factory physician can be used in litigation. Even in those States where the report of a physician cannot be used in compensation suits, a fair degree of success can be anticipated only when close contact is maintained between each reporting physician and the agency to which occupational disease reports are sent.

Physicians should adopt the same attitude toward the reporting of occupational diseases as now exists with regard to the reporting of communicable diseases. The recurrence of such diseases may be obviated by a prompt investigation on the part of a State industrial hygiene service of those conditions in a plant which may be the causative agent, followed by prompt measures for the control of the environmental conditions responsible for the disease.

Industries investigated.—Table 2 presents information on the types of industries in which the field investigations were made. Of the 3,662 establishments investigated, 84.3 percent were in the manufacturing industries and an approximately equal percentage of workers, 84.6, were included in these investigations. With a few exceptions, the proportion of establishments varied slightly among the different groups. These exceptions include the iron and steel industries,

which accounted for the greatest number of plants investigated, 20.4 percent, and 15.1 percent of the workers, and the transportation equipment industries, such as shipbuilding, aircraft, and automobile, which covered the largest proportion of workers, 27.3 percent, in only 5.2 percent of the plants. Activities also included studies in the extraction of minerals industries, chiefly the metal mines and quarries, and mercury mines previously mentioned; and in the service industries, such as dry cleaning establishments, automobile repair shops, and garages.

TABLE 2.—*Industries in which investigations were conducted*

Industry or service groups	Number		Percent	
	Establishments investigated	Workers involved	Establishments investigated	Workers involved
All groups.....	3,662	849,385	100.0	100.0
Manufacturing industries:.....	(3,065)	(718,331)	(84.3)	(84.6)
Food and kindred products.....	306	31,582	8.4	3.7
Textile mill products.....	240	52,536	6.5	6.2
Apparel and other finished products.....	143	18,424	3.9	2.2
Lumber, furniture, and finished lumber products.....	175	17,336	4.8	2.0
Paper, printing, publishing, and allied industries.....	145	21,308	3.9	2.5
Chemical and allied, including products of petroleum.....	178	26,388	4.9	3.3
Rubber products.....	27	5,662	.7	.7
Leather products.....	40	7,651	1.1	.9
Stone, clay, and glass products.....	270	19,754	7.4	2.3
Iron and steel and their products.....	749	128,224	20.4	15.1
Nonferrous metals and their products.....	250	41,496	6.8	4.9
Machinery (except electrical).....	101	39,099	2.8	4.6
Electrical machinery.....	112	54,329	3.1	6.4
Transportation equipment, including automobiles.....	189	231,606	5.2	27.3
Miscellaneous manufacturing industries.....	160	20,936	4.4	2.5
Extraction of minerals.....	169	22,365	4.6	2.6
Dry cleaning plants and laundries.....	122	4,407	3.3	.5
Auto and other repair shops.....	163	3,130	4.5	.4
Miscellaneous services as construction, transportation, etc.....	7	11,529	1.0	1.3
Retail stores, offices, etc.....	67	17,631	1.8	2.1
Nonindustrial (schools, barracks, residences).....	19	71,992	.5	8.5

Two other nonmanufacturing groups are shown. The first group consists of the transportation and construction industries, accounting for 1.0 percent of the establishments and 1.3 percent of the workers. The second group consisted of retail shops, offices, beauty shops, and like services. They also accounted for a small proportion of establishments and workers (1.8 and 2.1 percent).

The nonindustrial group (which points to the diversity of industrial hygiene activities) accounted for less than 1 percent of the investigations but involved 8.5 percent of the individuals, who had no connection with industrial production or service. Among these are schools, homes, hospitals, and barracks. Investigations were made of the carbon monoxide hazard, temperature and humidity in these places.

Owing to certain inconsistencies in reporting by a number of the divisions, no reliable breakdown of material exposures by industry group was possible. If such information is desired, reference may be

made to Public Health Bulletin No. 259 issued by the United States Public Health Service; this bulletin contains a representative list of material exposures for industry groups (3).

However, a tabulation of the 3,662 investigations was made according to whether the primary purpose—often coincident with the chief exposure or condition studied—was to investigate occupational hazards involving studies of air contaminants only, or whether the investigation was in the nature of a general survey in which the environmental conditions were also evaluated; or third, whether the immediate purpose was to evaluate medical provisions in the plant. The analysis showed that 37 percent of the investigations fell into the first group, and called for the greater portion of engineering studies requiring quantitative determinations of the atmosphere and, very frequently, medical examinations of the workers.

More than one-half of the investigations, or 56 percent, were surveys in which no specific condition was studied but rather the whole plant appraised. Occasionally, studies were limited to ventilation, illumination, or sanitation, but these were few. Usually the comprehensive survey dealt with all phases of industrial hygiene. The large proportion of the survey type of investigation is accounted for in the plans of divisions to make such investigations of defense industries, and further by the fact that one State reported a large number of preliminary surveys for the evaluation of the industrial hygiene problem of that State.

The remaining 7 percent of the investigations dealt with the physical condition of the workers, and industrial health problems such as fatigue, the incidence of respiratory and other diseases. Occasionally the purpose was to take periodic chest X-rays or to make routine medical examinations.

Recommendations.—An important factor in connection with field investigations is an evaluation of what has been accomplished. Most of the investigations were made because of known or suspected potential health hazards. In the control of these, certain recommendations were offered.

As may be observed from table 3, recommendations were made in 54 percent, or 1,977, of the 3,662 establishments investigated. A total of 513,046 workers were covered by the investigations in these plants although only 353,787, or 41.7 percent, of all the workers involved were affected by the recommendations. This is explained by the fact that a survey may take in the whole plant but improvements may be indicated in only one part of it. The analysis further revealed that in 1,546, or 42.2 percent, of all the plants no recommendations were made because none were implied or needed at the time. These plants included 306,608 workers, or 36.1 percent of the total. Finally, in the remaining 3.8 percent, or 139 establishments, the investigations

were completed but reports on recommendations were not submitted by the end of the fiscal year.

TABLE 3.—*Workers affected by recommendations*

Status of recommendations	Number		Percent	
	Establishments	Workers	Establishments	Workers
Establishments investigated.....	3,662		100.0	
Workers involved.....		849,385		100.0
Recommendations made.....	1,977	353,787	54.0	41.7
(Not affected by recommendations).....		(159,259)		(18.7)
No recommendations implied.....	1,546	306,608	42.2	36.1
Reports incomplete on recommendations.....	139	29,731	3.8	3.5

¹ The number of workers involved in investigation in these plants is 513,046, although only 353,787 were actually affected by recommendations.

Table 4 presents data on the extent of compliance with the recommendations made. This is another instance in which accomplishment is difficult to evaluate adequately. Although information was offered in the annual reports of the specific type of recommendation made, it was decided for the sake of simplicity and brevity to group them according to the phase of the investigation implied. No account was taken of the number of recommendations but rather of the number of different workers affected. Likewise, no consideration was given to whether the recommendation called for improvements, repairs, additions of facilities, or new installations. In view of these limitations, it is hoped that these data will at least furnish an index to the type of condition needing correction.

This table shows that recommendations were reported as carried out for 235,925, or 66.7 percent, of the 353,787 workers affected by recommendations made. These totals represent the maximum number of workers, regardless of the number and type of recommendation as contrasted with the rest of the table in which the numbers do not necessarily refer to different workers. For example, some of the workers affected by recommendations on control of air contaminants may also be affected by recommendations on medical services as well, and even on sanitation. For this reason, the first and second columns will add to more than the totals given in each column, and hence the corresponding percentages in the third and fourth columns will add to more than 100 percent.

The most common phase of an investigation concerning which recommendations were made was engineering control of air contaminants. These particular recommendations affected 61.1 percent of the 353,787 workers; an equally large proportion, 65.6 percent, of all the workers for whom recommendations were carried out was represented by this type. Such recommendations may refer to respirators,

wet methods, enclosure of hazardous processes, and local exhaust ventilation systems. The last method of control is very flexible and can be applied in a variety of conditions associated with practical engineering measures for the elimination of dusts, fumes, or gases.

TABLE 4.—*Extent of compliance with recommendations*

Phase of investigation covered by recommendations	Number of workers affected by—		Percent of all workers affected by—		Percent of workers affected by compliance with recommendations on specific phases (2)+(1)
	Recommendations made (1)	Recommendations reported complied with (2)	Recommendations made (3)	Recommendations reported complied with (4)	
Total number of workers affected by recommendations regardless of number or kind.....	353, 787	235, 925			66.7
Engineering control of air contaminants.....	216, 218	154, 740	61. 1	65. 6	71.6
General ventilation.....	53, 441	31, 750	15. 1	13. 5	59. 4
Substitution.....	2, 408	1, 623	. 7	. 7	67. 4
Personal protective measures.....	142, 411	117, 894	40. 3	50. 0	82. 8
Illumination.....	16, 357	9, 878	4. 6	4. 2	60. 4
Sanitation.....	48, 704	33, 709	13. 8	14. 3	69. 2
Good housekeeping.....	32, 794	16, 511	9. 3	7. 0	50. 3
Medical facilities.....	83, 463	35, 629	23. 6	15. 1	42. 7

Recommendations concerning personal protective measures, such as the use of goggles, protective clothing, and ointments, were also common. They were made for 40.3 percent of the workers and were carried out for 50 percent. Ranking next were recommendations concerning medical services being made for 23.6 percent of the workers and complied with for 15.1 percent.

The remaining percentages ranged from 0.7 affected by recommendations on substitution of nontoxic substances for toxic ones to 15.1 percent on general ventilation, made chiefly in ventilation and temperature and humidity studies. The corresponding range of percentages for compliances were 0.7 percent for substitution and 14.3 percent for sanitation.

The last column in this table shows the percentage of workers affected by compliance with recommendations on specific phases of a study. It can be seen from this table that recommendations on personal protective measures are likely to be most frequently carried out and those on medical services least often. The percentages are 82.8 and 42.7, respectively. With respect to recommendations on control of air contaminants, the table shows that they were carried out for 71.6 of the affected workers. The remaining percentages ranged from 50.3 for good housekeeping practices to 69.2 for sanitation.

These data indicate that the agencies are not only active but are obtaining cooperation. In those instances where recommendations have not been reported as carried out, such factors as lack of time, personnel, and distances prevented the necessary follow-up work.

OCCUPATIONAL DISEASES

An important though at present not a major activity deals with epidemiological investigations of plants in which occupational diseases were reported. A total of 1,578 cases of illness was reported which resulted in the investigation of 236 establishments directly affecting 23,913 workers.

TABLE 5.—*Industries in which cases of occupational illness were investigated*

Industry group	Number of establishments investigated	Number of workers affected	All cases of illness reported	
			Number	Percent
All specified groups.....	210	23, 548	1, 536	100. 0
Food and kindred products.....	17	6, 864	911	59. 3
Textile mill products, apparel.....	17	2, 184	85	5. 5
Lumber and furniture.....	20	135	14	. 9
Chemical and allied.....	12	130	23	1. 5
Leather products.....	7	2, 262	15	1. 0
Stone, clay, and glass products.....	4	22	8	. 5
Iron and steel and their products.....	35	2, 667	110	7. 2
Nonferrous metals and their products.....	28	1, 194	71	4. 6
Electrical machinery.....	6	173	9	. 6
Transportation equipment.....	22	7, 350	216	14. 1
Miscellaneous manufacturing industries.....	10	241	20	1. 3
All other (garages, laundries, etc.).....	32	326	54	3. 5
Miscellaneous industries:				
Diagnosis of illness refuted.....	20	297	36	-----
Illness of nonoccupational origin.....	6	68	6	-----
Total.....	236	23, 913	1, 578	-----

In order to show the causes and hazards associated with these illnesses, two tables have been prepared. The first, table 5, presents by industry group the number of cases of all illness, and the number of establishments and workers affected. Because a few of the groups were small, certain combinations were made. This table also shows that of the 1,578 cases reported, investigations revealed that 6 were of nonoccupational origin, and for 36 others the diagnosis was disproved. This left a total of 1,536 cases of illness, which were considered in some detail. More than one-half, or 59.3 percent, were reported in the food and kindred products industries. The transportation industries accounted for the next largest proportion of cases, or 14.1 percent, and the iron and steel industries for 7.2 percent. The proportions in the other industries varied from 0.5 percent in the stone, clay, and glass industries, to 5.5 percent in the textile mill industries.

Table 6 shows the chief exposure or agent and the different causes of illness which gave rise to the investigations. Conjunctivitis and dermatitis were the two most frequent causes of illness reported, accounting for 86.2 percent of all the cases. One hundred and ninety cases of conjunctivitis were caused by welding glare, chiefly in the transportation industries, and the 687 cases of conjunctivitis which were caused by hydrogen sulfide gas were from harbor water used to

flume sardines in fish canneries. Two hundred and ten of the 446 cases of dermatitis were caused by contact with foods, such as sugar and tomatoes, while the remainder were caused by exposure to oils, textile and leather dressings, mercury compounds and many other agents. It is a well established fact that the dermatoses lead the causes of occupational diseases for which compensation is paid, ranging, according to reliable sources, from 60 to 70 percent. This proportion does not hold true in the present report, since almost twice as many cases of conjunctivitis as dermatoses were reported. However, it must be remembered that this report is an account of actual activities in these States and is not a study in which any sampling procedure was set down and followed. Furthermore, the 1,578 cases of occupational illness considered in this analysis do not by any means represent the total number of different cases reported in these States. The actual number is probably many times this total. The 1,578 cases were tabulated because they gave rise to investigations in 236 establishments and furnish an index to some interesting and useful information.

Among the cases of metallic poisoning, 53 were lead poisoning, 4 mercury poisoning, and of the 4 others not specified in the table, 2 were cases of cadmium poisoning, 1 zinc poisoning, and 1 metal fume fever.

The solvents also form an important group of systemic illnesses. Besides the 28 cases of benzol poisoning, the column "poisoning from other solvents" lists 9 others; 3 were due to carbon tetrachloride, 3 to trichlorethylene, and the 3 others to toluol, carbon disulfide, and naphtha.

Carbon monoxide poisoning accounted for 21 cases, and the various respiratory infections, such as bronchitis, for 18 others. Seven cases of silicosis were also investigated, the diagnosis for most of these being reported as doubtful. The group of miscellaneous cases includes, among others, poisoning caused by nicotine fumes, cotton disease, allergy, and isolated instances of poisoning from nitrous fumes and formaldehyde.

Specific recommendations for control measures were made for approximately 16,000 of the workers affected in these investigations. It is especially interesting to note that at the close of the fiscal year these were reported as carried out for 85 percent of the workers. This indicates an earnest desire on the part of industry to prevent the occurrence of more cases from the same sources.

LABORATORY ACTIVITIES

Because quantitative studies are often necessary in determining the degree of a hazard and the effectiveness of any control measure applied,

the laboratory becomes an essential facility of the industrial hygiene division.

TABLE 6.—*Distribution of the 1,536 cases of occupational illness by exposure or agent, and by cause*

Exposure or agent	All cases		Conjunctivitis	Dermatosis	Metallic poisoning			Benzol poisoning	Poisoning from other solvents	Carbon monoxide poisoning	Silicosis	In-respiratory infection	Miscellaneous
	Number	Percent			Lead	Mercury	All other						
All cases—number.....	1,536	100.0	879	446	53	4	4	28	9	21	7	18	67
All cases—percent.....			57.2	29.0	3.4	.3	.3	1.8	.6	1.4	.4	1.2	4.4
Foods (sugar, tomatoes).....	218	14.2		210									8
Chemicals, dyes, textile dressings.....	61	4.0		61									
Alkalies.....	5	.3		4								1	
Oils (cutting and lubricating).....	54	3.5		54									
Extreme temperatures.....	6	.4		2									4
Welding rays.....	190	12.4	190										
Organic dusts.....	45	2.9	1	3									140
Siliceous and nonsiliceous dusts.....	13	.8									7	6	
Metallic dusts.....	84	5.5		23	53	4	4						
Hydrogen sulfide.....	689	44.8	687										2
Other gases.....	27	1.8		2						21		3	1
Carbon tetrachloride.....	3	.2							3				
Trichlorethylene.....	3	.2						3					
Other solvents.....	35	2.3		1			28	3					3
Chrome acid.....	18	1.2		14								3	1
Other acids.....	20	1.3		19									1
Anthrax.....	6	.4											6
All others.....	50	3.8	1	53							4		1

¹ 18 were cases of cotton disease, and 16 "allergy."

Laboratory facilities are not fully developed in all the States; in fact, a few States have no facilities at all, and must rely upon other divisions in the health department for laboratory services. However, all but 3 of the 25 States which submitted reports were more or less actively engaged in laboratory work. They collected 14,847 material samples and specimens during the reporting year. Of this total, 1,173 were of blood, 768 of urine, and 239 of sputum. The remainder were samples of air, dusts, fumes, gases, mists, or chemical substances used in industry. No tabulation was attempted of the number of determinations made routinely and in development of methods on these samples, but this number was fairly large. However, a total of 3,417 field determinations was reported, including measurements of air velocities, illumination readings, and temperature and humidity measurements. In addition, many pieces of apparatus and other field equipment were designed and constructed.

MEDICAL SERVICES

The medical services that an industrial hygiene unit can offer to industry are varied. Sixteen of the 25 States reported that 11,000

medical examinations were made in connection with the investigations. This number represents the examinations made by personnel of the divisions either alone or in cooperation with other agencies. It does not include the countless numbers of examinations performed by industry itself as a result of the State investigations and recommendations, and the active promotional work done in this field.

Besides assisting with the examinations and taking chest X-rays, the personnel were often consulted in the diagnosis of occupational diseases; they reviewed physical examination records of workers in individual plants and interpreted chest X-rays for them. They not only encouraged and sponsored reporting on industrial absenteeism due to all forms of illness, but assisted in certain instances in setting up the appropriate machinery for such recording, and later in the analysis of the records.

A few divisions are furnishing direct assistance toward establishing nursing services in the plants, including the preparation of a roster of nurses interested and available for industrial nursing, and surveys of nursing practices prevailing in industry.

Often the divisions are not equipped to render direct medical services because of prevailing policies or lack of personnel. In such instances they establish cooperative working relationships with the local health agencies. For example, cooperative programs with local medical societies and other health agencies are being developed in one State for the promotion of medical examinations in small plants. Two areas were selected to try out the program. A similar program has also been planned which provides for full-time health services in 7 counties of the State. It will include a survey of all industrial plants in cooperation with private physicians located throughout these areas.

The same State reported a joint investigation by the local tuberculosis society in a garment plant employing approximately 400 women. The results disclosed that 11 active cases had been removed from the plant during the past 4 years. A total of 290 employees was X-rayed and of this number 3.8 percent were found positive. Follow-up on contacts of these cases will be made and cases will be placed under treatment if indicated. The company further agreed to conduct pre-employment medical examinations on all new employees.

EDUCATIONAL AND PROMOTIONAL ACTIVITIES

The need for stimulating interest in industrial hygiene has been felt, particularly since the industrial expansion program. The divisions learned that in order to sell their services they first had to sell themselves. Even today industry is not too well acquainted with industrial hygiene work, which until fairly recently has been either

By actual count, the divisions reported that they prepared or assisted in the preparation of 125 articles published in professional journals or in State departmental bulletins. They prepared 55 informative pamphlets, bulletins, and circulars which were distributed to employers, employees, physicians, and others. Personnel in these units made 255 speeches before audiences totaling approximately 25,000 persons at meetings, conferences, before professional societies and civic groups. They also reported 30 radio broadcasts for this period.

Fourteen exhibits were held, depicting activities of the divisions, or illustrating information on subjects such as industrial dermatoses, lead and carbon monoxide hazards in industry.

An activity that is constantly increasing in importance and extent is lecturing on industrial hygiene before students in medical, engineering, and vocational schools, before nurses in hospitals, and at present in a few defense training schools. At least 155 such lectures were presented with an attendance of approximately 10,000 students.

An analysis, based on titles, was prepared of the subject matter used in speeches, lectures, and publications. It showed that 24 percent of the subjects were on industrial hygiene in general, such as activities and functions of the divisions. Another 7 percent stressed the role of the national defense program in industrial hygiene. Eighteen percent of the subjects covered the medical phase, such as medical programs for industry, nursing activities, the role of the private physician in an industrial hygiene program, absenteeism reporting, and the incidence and control of syphilis and tuberculosis in industry. The remaining 51 percent of the subjects related to occupational diseases, and the engineering and chemical control of occupational health hazards.

A word may be said at this time about the consultation services that are given to industry and others by the divisions. No tabulation of these was made, although a number of the States offered the necessary information. The subjects were extremely varied, necessitating on the part of the divisions a well supplied technical and general reference library.

In addition, the divisions sponsor many general health programs in industry. For example, one State has launched a program for the organization of "Yours for Health" clubs. Membership includes both employees and employers, the former agreeing to do all they can to promote the sanitation, safety, and morale of the place where they work, and the latter pledging to protect the health of their workers. It is anticipated that this plan of cooperation between employers, employees, and the State government will do much to improve working conditions.

With the ultimate expansion in organization and facilities of these divisions, educational and promotional activities will, as a result, increase in scope and extent. Even now it is impossible to discuss the variety of these activities. Certain aspects have been mentioned, but there are others. Nothing has been said about the codes and regulations the divisions sponsor and write, nor about activities directed toward training plant personnel in carrying out plant programs of industrial hygiene. Moreover, as a result of the defense program outlined last spring, the United States Public Health Service and other organizations have found it desirable to send physicians, engineers, and chemists for in-service training with some of the well established State and local divisions.

CONCLUSIONS AND RECOMMENDATIONS

The present report is conclusive proof that reporting of industrial hygiene activities is not only possible but desirable. Literature on how to control and prevent industrial health hazards is abundant, but it is only within the past 2 years that any attempt has been made to estimate uniformly the extent to which these practical control measures are being complied with in industry. Were it not for the cooperation and the pioneer spirit of the divisions submitting the necessary data on their activities, even such a summary of progress as this report represents would not be possible. It is hoped that in time reporting will be extended to all States with industrial hygiene divisions. An inventory would be desirable of these activities in the whole country. Certain measures will also be required to improve the reporting with an aim towards uniformity of interpretation of what constitutes measurement of progress.

A report of this type serves many useful purposes. In the absence of any other criteria, it indicates the extent and diversity of industrial hygiene activities over a definite reporting period. It furnishes a justification, if one were needed, for the continuance of these activities. It further stimulates the keeping of good records within the States, information which can be used for measuring their own progress from year to year. And, finally, it furnishes, in perspective, an idea of not only what has been done but what needs to be done.

Several pertinent facts were brought out by this analysis. Of the twenty nine and one-half million workers in these 25 States, about one-half of whom are engaged in industries with potential health hazards, less than two million were reached through industrial hygiene services during the period of a year. With present personnel and budgets, this represents the peak load these divisions can evidently carry. The analysis further points out that probably one-half of the employees are working under conditions that need some correc-

tion or improvement. Instead of these conditions improving, they may be growing worse as the result of increased industrial production. Individual company reports have revealed, for example, that new health problems totally unrelated to normal times have been created and are causing bottlenecks in production; that days lost from sickness and accidents have increased; and that many instances of occupational diseases have developed as a result of the use of toxic materials, because the supply of relatively safe substances is being diverted for production of war materials, or cannot be replaced.

These conditions clearly indicate the need for more follow-up work in those plants where recommendations for improvements have been offered. More effort in this direction will mean more compliances. Experience has shown that industry is more likely to cooperate if convinced of the need for such improvements, and assured of the interest and determination on the part of the governmental agency responsible to see that they are carried out.

Another shortcoming in industrial hygiene programs is investigation of occupational diseases. The results of the analysis revealed that less than 4 percent of the investigations were made for this reason. The divisions can do much not only in stimulating such investigation but also in sponsoring and inaugurating the uniform reporting of occupational diseases. Practical measures will need to be taken in those States where necessary legislation has been set up but not enforced, and in others where no provision at all for such reporting has been made. Physicians need to be trained in the recognition of these diseases and convinced of the importance of reporting them in order to prevent their recurrence.

In addition, there is the problem of absenteeism reporting from all disabilities, an activity that is still unexplored. Industry is not fully aware of the importance of such statistics in determining the nature and extent of its health problems. In concentrating on the vital necessity of speeding up production, it is likely to overlook the somewhat obscure factor of lost time from sickness as a cause of impeded production. The divisions can sponsor and stimulate absenteeism reporting by persuading industry to adopt systems of keeping the necessary records. They can show industry how this is done, and even offer the necessary assistance in analyzing and interpreting the records, and then in formulating health programs to overcome the problems revealed.

Thus the information presented in this report emphasizes the crying need for augmented industrial hygiene programs in this country. It is true that almost all of these States have only begun this type of work within the past 5 years, and that time is necessary in order to develop none too familiar programs that call for concerted efforts on the

part of industry, governmental agencies, and others. But it is also true that the present wartime conditions cannot wait for the slow peacetime development of such programs. Since the State and local industrial hygiene divisions are identified with this work, and in order to keep pace with the demands of industrial production, accomplishment of what is expected will mean more trained personnel, budgets increased far beyond the present allotment of about one million dollars for such work in 36 States, and, if necessary, the revision of hampering policies and legislation pertaining to occupational diseases and accidents, and other preventive phases of industrial health. And, finally, the realization must be brought home that the workers who produce the airplanes and the guns must be as physically fit as the men who operate them.

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SULFAGUANIDINE NONEFFECTIVE IN THE TREATMENT OF TYPHOID FEVER AND TYPHOID CARRIERS

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Sulfaguanidine is being widely used in the treatment of bacillary dysentery with considerable success. Several reports have suggested that it be used in infections with *S. typhi*. Marshall, Bratton, et al, (1) and Bornstein and Straus (2) report in vitro experiments indicating definite action of the drug on typhoid bacilli. Levi and Willen (3) record the treatment of a typhoid carrier with sulfaguanidine after cholecystectomy. Chiefly because of the success of the drug in vitro, we have treated a small group of typhoid cases and carriers with sulfaguanidine.

Six hospitalized, moderately ill patients with proven typhoid fever were placed on sulfaguanidine therapy. Five-gram doses were given 4 times a day for periods of 8 to 10 days. In all of these cases, there was no unusual clinical improvement following the use of sulfaguan-

¹ From the Division of Infectious Diseases, National Institute of Health, and the Puerto Rican Department of Health.

idine. All recovered but there was no indication that the drug in any way affected the fever or other clinical signs and symptoms. Stool cultures were obtained daily. All became negative at about the usual time for the uncomplicated case of this disease, namely, about the time the temperature became normal.

In addition, cultures were made from 3 known chronic carriers of typhoid bacilli daily for 6 days, the carriers were then placed on sulfaguanidine. These patients received 15 grams per day for 14 days. Daily stool cultures were obtained. Table 1 summarizes the results of stool cultures obtained before, during, and after treatment. Both before and during treatment, daily cultures were taken; post-treatment cultures were made at weekly intervals. The last specimen examined was positive on all patients, this was at least 3 weeks after the drug was stopped. Furthermore, there was no diminution in the number of colonies found per plate of Wilson Blair medium.

It is evident that in the doses used sulfaguanidine is not effective in the treatment of either cases or carriers of *S. typhi*.

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TABLE 1.—Summary of stool cultures results on 3 typhoid carriers treated with sulfaguanidine

	Number of cultures					
	Before treatment ¹		During treatment ¹		After treatment :	
	Positive	Negative	Positive	Negative	Positive	Negative
Case I.....	6	-----	14	-----	3	-----
Case II.....	5	1	13	1	3	1
Case III.....	5	1	12	2	4	-----

¹ Daily cultures.

² Weekly cultures.

DEATHS DURING WEEK ENDED MAY 23, 1942

[From the Weekly Mortality Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended May 23, 1942	Correspond- ing week, 1941
Data from 87 large cities of the United States:		
Total deaths.....	8,101	8,342
Average for 3 prior years.....	8,175	-----
Total deaths, first 20 weeks of year.....	177,623	180,990
Deaths per 1,000 population, first 20 weeks of year, annual rate.....	12.4	12.7
Deaths under 1 year of age.....	543	524
Average for 3 prior years.....	495	-----
Deaths under 1 year of age, first 20 weeks of year.....	11,300	10,530
Data from industrial insurance companies:		
Policies in force.....	64,976,942	64,842,605
Number of death claims.....	11,468	11,779
Death claims per 1,000 policies in force, annual rate.....	9.2	9.5
Death claims per 1,000 policies, first 20 weeks of year, annual rate.....	10.0	10.5

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

REPORTS FROM STATES FOR WEEK ENDED MAY 30, 1942

Summary

Of the 9 communicable diseases included in the following weekly table, and for which data for earlier years are available, the current incidence of only 3—influenza, measles, and meningococcus meningitis—was above the 5-year (1937–1941) median expectancy during the current week.

The number of cases of meningococcus meningitis reported (81) was the same as that reported last week. The largest numbers of cases were reported in the Middle Atlantic and South Atlantic States. The total to date (first 21 weeks), 1,648 cases, is above that for any other year since 1937, when 3,332 cases had been reported for this period.

The incidence of poliomyelitis declined from 26 cases last week to 19 for the current week, as compared with a 5-year median of 22 cases.

Of 23 cases of Rocky Mountain spotted fever reported from 15 States only 4 cases were reported in the Mountain and Pacific area. Six cases occurred in Oklahoma.

Other reports include 1 case of anthrax in Pennsylvania, 188 cases of bacillary, 20 cases of amebic, and 93 cases of unspecified dysentery, 13 cases of infectious encephalitis (6 in Ohio), 34 cases of smallpox (11 in Illinois), 13 cases of tularemia, 100 cases of typhoid fever, and 35 cases of endemic typhus fever (12 in Georgia, 9 in Texas, and 6 in Florida).

The death rate for 88 large cities in the United States for the current week is 11.0 per 1,000 population, as compared with 11.3 for the preceding week and a 3-year (1939–41) average of 10.9.

Telegraphic morbidity reports from State health officers for the week ended May 30, 1942, and comparison with corresponding week of 1941 and 5-year median

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Week ended—		Median 1937-41	Week ended—		Median 1937-41	Week ended—		Median 1937-41	Week ended—		Median 1937-41
	May 30, 1942	May 31, 1941		May 30, 1942	May 31, 1941		May 30, 1942	May 31, 1941		May 30, 1942	May 31, 1941	
NEW ENG.												
Maine.....	0	1	0	1		62	76	106	3	0	0	
New Hampshire.....	0	0	0			40	23	3	0	0	0	
Vermont.....	0	0	0			200	23	23	0	0	0	
Massachusetts.....	4	4	3			968	790	790	3	1	1	
Rhode Island.....	0	0	0			200	0	59	0	1	0	
Connecticut.....	0	0	1	2	1	400	397	181	4	0	0	
MID. ATL.												
New York.....	13	9	21	16	11	776	2,781	2,181	9	7	5	
New Jersey.....	1	9	7	1	1	661	1,223	990	2	0	0	
Pennsylvania.....	9	16	23	1		1,143	4,664	1,969	7	2	6	
E. NO. CEN.												
Ohio.....	6	4	8	9	6	309	1,716	1,362	0	0	1	
Indiana.....	3	10	5	4	11	234	727	159	0	0	0	
Illinois.....	23	16	36	15	9	287	1,243	417	0	1	1	
Michigan.....	1	2	2		1	450	1,639	667	0	1	1	
Wisconsin.....	0	0	1	48	9	1,274	1,634	1,006	1	0	0	
W. NO. CEN.												
Minnesota.....	2	0	1		3	514	22	46	1	0	0	
Iowa.....	2	4	3		1	268	135	145	0	0	0	
Missouri.....	10	1	7	1		189	472	53	3	1	0	
North Dakota.....	0	1	1	4		18	22	22	2	0	0	
South Dakota.....	1	0	0			53	4	4	0	1	0	
Nebraska.....	1	4	2	1		258	33	33	0	0	0	
Kansas.....	1	10	5	4	2	287	358	358	0	0	1	
SO. ATL.												
Delaware.....	0	0	0			20	80	13	0	0	0	
Maryland.....	5	0	3	1	4	300	411	165	7	1	0	
Dist. of Col.....	0	1	2			50	204	146	0	1	0	
Virginia.....	2	8	8	75	71	167	919	465	9	2	1	
West Virginia.....	3	3	3	4	8	17	22	526	35	0	0	
North Carolina.....	3	10	8	2		557	1,294	715	0	0	1	
South Carolina.....	3	7	7	146	192	128	141	670	68	0	1	
Georgia.....	3	1	3	8	12	12	142	272	73	1	0	
Florida.....	1	4	6	1	14	3	246	815	110	0	0	
E. SO. CEN.												
Kentucky.....	1	2	5	1		63	610	148	0	1	1	
Tennessee.....	2	4	4	10	10	16	33	365	131	2	0	
Alabama.....	7	6	6	17	31	28	105	276	149	1	4	
Mississippi.....	5	2	3						3	1	1	
W. SO. CEN.												
Arkansas.....	4	2	3	27	7	23	108	215	108	1	0	
Louisiana.....	1	0	5	9	1	7	79	17	13	1	1	
Oklahoma.....	3	5	3	29	17	17	98	127	95	1	0	
Texas.....	16	16	23	182	419	163	641	562	498	5	3	
MOUNTAIN												
Montana.....	1	0	0	4		1	145	24	31	2	0	
Idaho.....	0	0	0			3	63	37	37	0	0	
Wyoming.....	0	1	0	36			55	13	24	0	0	
Colorado.....	5	6	8	32	17	8	208	379	231	1	0	
New Mexico.....	1	0	1	2		1	28	81	75	0	0	
Arizona.....	0	0	0	59	50	40	48	59	35	0	0	
Utah.....	0	0	0	5	1		978	28	73	1	0	
Nevada.....	0	0					55	0		0	0	
PACIFIC												
Washington.....	2	0	1	1			646	21	62	3	1	
Oregon.....	0	1	1	6	7	9	135	79	79	0	0	
California.....	6	5	22	55	1,203	31	5,312	386	386	8	1	
Total.....	151	175	280	809	2,109	622	19,116	25,907	14,687	81	33	35
21 weeks.....	5,590	5,523	9,031	75,305	489,498	155,044	391,848	715,433	288,402	1,618	1,031	1,031

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended May 30, 1942, and comparison with corresponding week of 1941 and 5-year median

Division and State	Polio-myelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever		
	Week ended—		Medi-an 1937-41	Week ended—		Medi-an 1937-41	Week ended—		Medi-an 1937-41	Week ended—		Medi-an 1937-41
	May 30, 1942	May 31, 1941		May 30, 1942	May 31, 1941		May 30, 1942	May 31, 1941		May 30, 1942	May 31, 1941	
NEW ENG.												
Maine.....	2	0	0	5	3	14	0	0	0	0	0	0
New Hampshire.....	0	0	0	7	3	4	0	0	0	0	0	0
Vermont.....	0	0	0	5	10	10	0	0	0	0	0	0
Massachusetts.....	0	0	0	181	134	157	0	0	0	2	13	1
Rhode Island.....	0	0	0	4	1	6	0	0	0	0	0	0
Connecticut.....	0	0	0	21	39	52	0	0	0	0	0	4
MID. ATL.												
New York.....	3	1	1	247	389	643	0	0	0	5	7	7
New Jersey.....	0	0	0	80	144	181	0	0	0	2	1	2
Pennsylvania.....	0	0	0	307	339	339	0	0	0	8	6	8
E. NO. CEN.												
Ohio.....	1	0	1	195	232	300	0	0	1	2	2	8
Indiana.....	0	0	0	39	81	87	0	0	9	2	0	2
Illinois.....	1	0	1	194	173	364	11	4	9	4	2	4
Michigan ¹	0	0	0	192	182	381	0	7	7	4	1	2
Wisconsin.....	1	0	0	135	89	155	3	2	3	0	1	1
W. NO. CEN.												
Minnesota.....	0	0	0	52	48	73	0	0	11	2	0	0
Iowa.....	0	1	1	30	16	61	0	8	31	1	3	2
Missouri.....	0	0	0	40	81	55	1	2	11	5	4	2
North Dakota.....	0	0	0	5	0	6	0	0	1	0	0	0
South Dakota.....	0	1	0	10	9	8	0	3	3	0	0	0
Nebraska.....	0	0	0	13	15	15	2	0	2	0	0	0
Kansas.....	1	0	0	54	24	53	0	0	11	0	2	2
SO. ATL.												
Delaware.....	0	0	0	17	16	4	0	0	0	0	0	1
Maryland ²	0	0	0	53	46	38	0	0	0	9	3	3
Dist. of Col.....	0	0	0	5	11	13	0	0	0	0	0	1
Virginia.....	1	0	0	7	17	17	0	0	0	4	7	5
West Virginia.....	1	0	0	24	20	24	0	0	0	0	6	3
North Carolina.....	0	0	0	14	9	18	0	0	0	1	1	4
South Carolina.....	1	0	0	2	4	4	0	0	0	0	2	3
Georgia.....	0	0	0	8	9	9	2	0	0	9	4	8
Florida.....	1	5	1	2	1	5	0	0	0	4	2	6
E. SO. CEN.												
Kentucky.....	0	0	0	36	59	37	0	3	2	2	5	5
Tennessee.....	0	1	0	11	44	25	0	3	3	1	2	5
Alabama.....	1	0	0	5	20	7	0	0	1	4	3	3
Mississippi ¹	0	1	1	2	1	2	1	1	0	0	1	2
W. SO. CEN.												
Arkansas.....	0	1	0	7	4	4	7	5	9	3	2	8
Louisiana.....	1	0	1	4	2	10	0	0	1	7	13	8
Oklahoma.....	0	1	0	12	9	14	0	2	2	4	1	5
Texas.....	0	3	2	36	16	21	1	0	4	8	11	11
MOUNTAIN												
Montana.....	1	0	0	10	7	14	0	0	2	0	0	0
Idaho.....	0	0	0	2	7	4	0	0	0	0	0	1
Wyoming.....	0	0	0	15	2	4	0	0	1	0	0	0
Colorado.....	0	0	0	10	13	42	2	0	2	0	1	2
New Mexico.....	0	0	0	1	10	0	0	0	0	1	1	1
Arizona.....	0	0	0	3	6	5	1	0	0	0	1	1
Utah ¹	0	0	0	20	5	11	0	0	0	0	0	0
Nevada.....	0	0	0	0	0	0	0	0	0	0	0	0
PACIFIC												
Washington.....	0	0	0	26	14	36	2	0	4	0	6	2
Oregon.....	0	0	0	2	4	9	1	1	2	0	1	1
California.....	3	7	5	83	60	94	0	1	15	6	6	5
Total.....	19	22	22	2,232	2,435	3,476	34	42	269	100	121	149
21 weeks.....	436	466	442	76,813	76,508	101,249	471	958	6,508	1,700	1,747	2,414

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended May 30, 1942

Division and State	Whooping cough week ended—		An-thrax	Week ended May 30, 1942							
	May 30, 1942	May 31, 1941		Dysentery			En-ceph-alitis, infec-tious	Lep-rosy	Rocky Mt. spotted fever	Tula-remia	Ty-phus fever
				Ame-bic	Bacil-lary	Un-specified					
NEW ENG.											
Maine.....	24	25	0	0	0	0	0	0	0	0	
New Hampshire.....	3	5	0	0	0	0	0	0	0	0	
Vermont.....	30	11	0	0	0	0	0	0	0	0	
Massachusetts.....	196	203	0	0	2	0	0	0	0	0	
Rhode Island.....	28	24	0	0	0	0	0	0	0	0	
Connecticut.....	105	47	0	0	0	0	0	1	0	0	
MID. ATL.											
New York.....	323	215	0	1	0	0	3	0	1	0	
New Jersey.....	306	73	0	0	0	0	1	0	2	0	
Pennsylvania.....	238	316	1	2	0	0	0	0	1	1	
E. NO. CEN.											
Ohio.....	145	235	0	0	0	0	6	0	1	0	
Indiana.....	68	47	0	0	0	0	1	0	0	0	
Illinois.....	286	101	0	0	0	0	0	0	0	0	
Michigan ¹	279	290	0	0	0	0	0	0	0	0	
Wisconsin.....	194	113	0	0	0	0	0	0	0	0	
W. NO. CEN.											
Minnesota.....	20	68	0	2	0	0	0	0	0	0	
Iowa.....	18	29	0	0	0	0	0	0	0	0	
Missouri.....	8	64	0	0	0	0	0	1	0	0	
North Dakota.....	9	10	0	0	0	1	0	0	0	0	
South Dakota.....	0	7	0	0	0	0	0	0	0	0	
Nebraska.....	0	17	0	0	0	0	0	0	0	0	
Kansas.....	34	146	0	0	0	0	0	0	1	0	
SO. ATL.											
Delaware.....	1	0	0	0	0	0	1	0	0	0	
Maryland ¹	38	95	0	0	0	1	0	0	1	0	
Dist. of Col.....	17	10	0	0	0	0	0	0	0	0	
Virginia.....	89	53	0	0	0	46	0	0	1	0	
West Virginia.....	8	91	0	0	0	0	0	0	0	0	
North Carolina.....	165	222	0	0	0	0	0	0	1	0	
South Carolina.....	74	234	0	0	0	0	0	0	0	0	
Georgia.....	35	24	0	0	8	0	0	0	1	12	
Florida.....	38	33	0	2	1	0	0	0	0	6	
E. SO. CEN.											
Kentucky.....	124	65	0	0	0	0	0	0	2	0	
Tennessee.....	94	100	0	0	0	0	0	0	0	0	
Alabama.....	35	123	0	0	0	0	0	0	0	4	
Mississippi ¹			0	0	0	0	0	0	0	0	
W. SO. CEN.											
Arkansas.....	32	43	0	1	0	0	0	0	5	0	
Louisiana.....	2	2	0	2	0	0	0	0	0	2	
Oklahoma.....	13	15	0	0	0	0	0	6	0	0	
Texas.....	160	294	0	9	176	0	0	0	2	9	
MOUNTAIN											
Montana.....	32	12	0	0	0	0	1	0	2	1	
Idaho.....	3	11	0	0	0	0	0	0	0	0	
Wyoming.....	4	7	0	0	0	0	0	1	0	0	
Colorado.....	19	187	0	0	0	0	0	0	0	0	
New Mexico.....	22	13	0	0	0	0	0	0	2	0	
Arizona.....	18	18	0	0	0	45	0	0	0	0	
Utah ¹	34	51	0	0	0	0	0	0	0	0	
Nevada.....	5	0	0	0	0	0	0	0	0	0	
PACIFIC											
Washington.....	37	126	0	0	0	0	0	0	0	0	
Oregon.....	14	17	0	0	0	0	0	0	1	0	
California.....	333	568	0	1	1	0	0	0	0	0	
Total.....	3,752	4,460	1	20	188	93	13	0	23	13	35
21 weeks.....	80,538	97,886									

¹ New York City only.

² Period ended earlier than Saturday.

WEEKLY REPORTS FROM CITIES

City reports for week ended May 16, 1942

This table lists the reports from 89 cities of more than 10,000 population distributed throughout the United States, and represents a cross section of the current urban incidence of the diseases included in the table.

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
Atlanta, Ga.	0	0	3	1	1	0	3	0	2	0	0	4
Baltimore, Md.	1	0	2	1	265	5	11	0	27	0	1	26
Barre, Vt.	0	0	0	0	0	0	0	0	0	0	0	2
Billings, Mont.	1	0	0	0	18	0	0	0	0	0	0	0
Birmingham, Ala.	0	0	1	1	3	0	2	0	2	0	0	0
Boise, Idaho	0	0	0	0	3	0	0	0	0	0	0	0
Boston, Mass.	1	0	0	0	249	5	12	0	83	0	1	41
Bridgeport, Conn.	0	0	0	0	18	0	1	0	1	0	0	6
Brunswick, Ga.	0	0	0	0	21	0	1	0	0	0	0	0
Buffalo, N. Y.	0	0	0	0	17	0	6	0	11	0	1	5
Camden, N. J.	2	0	0	0	1	0	1	0	9	0	0	2
Charleston, S. C.	0	1	4	0	10	0	0	0	0	0	0	5
Charleston, W. Va.	0	0	0	0	0	0	0	0	0	0	1	0
Chicago, Ill.	10	0	0	2	47	0	24	0	55	0	0	104
Cincinnati, Ohio	0	0	0	1	4	0	5	0	22	0	0	8
Cleveland, Ohio	3	0	0	0	7	1	5	0	61	0	1	30
Columbus, Ohio	0	0	0	0	55	0	2	0	7	0	0	9
Concord, N. H.	0	0	0	0	1	0	1	0	0	0	0	0
Cumberland, Md.	0	0	0	0	0	0	0	0	1	0	0	0
Dallas, Tex.	1	0	2	2	57	0	3	0	3	0	1	2
Denver, Colo.	5	0	14	1	115	0	5	0	2	0	0	9
Detroit, Mich.	3	0	0	0	20	0	10	0	145	0	2	72
Duluth, Minn.	0	0	0	0	5	0	1	0	7	0	0	5
Fall River, Mass.	1	0	0	1	39	0	0	0	19	0	0	0
Fargo, N. Dak.	0	0	0	0	6	0	0	0	3	0	0	0
Flint, Mich.	0	0	0	1	1	0	2	0	3	0	0	2
Fort Wayne, Ind.	0	0	0	0	2	0	2	0	0	0	1	0
Frederick, Md.	0	0	0	0	0	0	0	0	0	0	0	0
Galveston, Tex.	0	0	0	0	3	0	0	0	0	0	0	5
Grand Rapids, Mich.	0	0	0	0	97	0	0	0	1	0	1	3
Great Falls, Mont.	0	0	0	0	48	0	3	0	0	0	0	6
Hartford, Conn.	0	0	0	0	65	0	0	0	1	0	0	7
Helena, Mont.	0	0	0	0	16	0	0	0	1	0	0	0
Houston, Tex.	3	0	0	0	17	0	8	0	5	0	1	4
Indianapolis, Ind.	0	0	0	0	228	0	6	0	22	0	0	32
Kansas City, Mo.	2	0	0	0	92	0	5	0	19	0	0	1
Kenosha, Wis.	0	0	0	0	7	0	0	0	1	0	0	13
Little Rock, Ark.	0	0	0	0	4	0	1	0	0	0	0	0
Los Angeles, Calif.	0	0	13	1	524	2	7	0	17	0	0	14
Lynchburg, Va.	1	0	0	0	0	0	1	0	1	0	0	34
Memphis, Tenn.	0	0	0	1	30	0	1	0	3	0	0	13
Milwaukee, Wis.	0	0	0	0	246	0	3	0	31	0	1	72
Minneapolis, Minn.	1	0	0	1	393	0	3	0	6	0	0	6
Missoula, Mont.	0	0	0	0	41	0	1	0	1	0	0	0
Mobile, Ala.	0	0	2	1	3	0	1	0	0	0	0	0
Nashville, Tenn.	0	0	0	3	2	0	0	0	2	0	0	8
Newark, N. J.	0	0	1	0	369	1	5	0	23	0	0	54
New Haven, Conn.	0	0	0	0	113	0	1	0	2	0	0	7
New Orleans, La.	1	0	2	1	65	3	5	0	5	0	0	5
New York, N. Y.	14	2	5	0	166	12	38	3	224	0	2	218
Omaha, Nebr.	1	0	0	0	180	0	2	0	7	0	0	1
Philadelphia, Pa.	1	0	1	0	38	1	18	0	189	0	1	68
Pittsburgh, Pa.	1	0	0	0	12	2	15	0	14	0	1	17
Portland, Maine	0	0	0	0	18	0	1	0	1	0	0	0
Providence, R. I.	0	0	0	0	204	0	6	0	3	0	0	23

City reports for week ended May 16, 1942—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Peritonitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
Pueblo, Colo.....	0	0	0	0	3	0	1	0	2	0	0	4
Racine, Wis.....	0	0	0	0	251	0	0	0	4	0	0	31
Reading, Pa.....	0	0	0	0	11	0	1	0	0	0	0	12
Richmond, Va.....	0	1	0	0	2	2	2	0	2	0	0	1
Roanoke, Va.....	0	0	0	0	1	0	0	0	0	0	0	0
Rochester, N. Y.....	0	0	0	0	9	0	2	0	8	0	0	11
Sacramento, Calif.....	1	0	1	0	90	0	4	0	0	0	0	28
Saint Joseph, Mo.....	1	0	0	1	3	0	0	0	0	0	0	0
Saint Louis, Mo.....	0	0	0	0	77	3	6	0	21	0	0	2
Saint Paul, Minn.....	1	0	2	110	0	3	0	3	0	0	0	23
Salt Lake City, Utah.....	0	0	0	175	0	5	0	6	0	0	0	6
San Antonio, Tex.....	2	0	1	18	0	7	0	1	0	0	0	2
San Francisco, Calif.....	0	0	1	374	2	6	0	10	0	0	0	17
Savannah, Ga.....	0	0	10	4	0	3	0	0	0	0	0	0
Seattle, Wash.....	1	0	1	134	1	5	0	1	0	1	1	20
Shreveport, La.....	1	0	0	1	1	2	0	0	0	0	0	0
South Bend, Ind.....	0	0	0	2	0	0	0	3	0	0	0	4
Spokane, Wash.....	0	0	0	29	0	2	0	1	0	0	0	7
Springfield, Ill.....	0	0	0	42	0	0	0	3	0	0	0	0
Springfield, Mass.....	1	0	0	59	0	4	0	17	0	0	0	21
Superior, Wis.....	0	0	0	4	0	0	0	0	0	0	0	0
Syracuse, N. Y.....	0	0	0	276	1	1	0	3	0	0	0	30
Tacoma, Wash.....	0	0	0	0	0	2	0	0	0	0	0	3
Tampa, Fla.....	0	0	0	26	0	0	0	0	0	0	0	0
Terre Haute, Ind.....	0	0	0	2	0	1	0	0	0	0	0	1
Topeka, Kans.....	0	0	0	41	0	1	0	0	0	0	0	3
Trenton, N. J.....	0	0	1	3	0	3	0	5	0	0	0	4
Washington, D. C.....	0	0	0	106	4	10	0	6	0	0	0	19
Wheeling, W. Va.....	0	0	0	6	0	1	0	1	0	0	0	0
Wichita, Kans.....	0	0	0	102	0	3	0	1	0	1	0	0
Wilmington, Del.....	0	0	0	4	0	1	0	1	0	0	0	0
Wilmington, N. C.....	0	0	0	6	0	2	0	0	0	0	0	0
Winston-Salem, N. C.....	0	0	0	9	0	1	0	1	0	0	0	0
Worcester, Mass.....	0	0	0	2	0	4	0	11	0	0	0	56

Dysentery, amebic.—Cases: Los Angeles, 2; New York, 4; Pittsburgh, 1; San Antonio, 1.

Dysentery, bacillary.—Cases: Chicago, 1; Los Angeles, 1; New York, 1; San Antonio, 1.

Encephalitis, infectious.—Cases: New York, 2; Richmond, 1.

Rocky Mountain spotted fever.—Cases: Baltimore, 1.

Tularemia.—Cases: Charleston, S. C., 1; Little Rock, 1; New Orleans, 1.

Typhus fever.—Cases: Birmingham, 8; Charleston, S. C., 2; Houston, 1; New Orleans, 1; San Antonio, 1; Shreveport, 2.

Rates (annual basis) per 100,000 population for the group of 89 selected cities in the preceding table (estimated population, 1942, 34,035,159)

Period	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
		Cases	Deaths						
Week ended May 16, 1942...	9.48	9.64	3.82	922.15	47.73	176.38	0.00	2.75	195.51
Average for week 1937-41....	14.69	14.22	4.48	707.43	68.80	273.94	2.32	3.40	196.96

¹ Median.

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended May 2, 1942.—During the week ended May 2, 1942, cases of certain communicable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal meningitis			2	1	6				2	11
Chickenpox		6		131	286	39	46	14	96	618
Diphtheria		14	2	6	1	5	9		1	40
Dysentery				5						5
Encephalomyelitis							1			1
German measles		3	16	32	68	2	20	5	18	164
Influenza					18	1			7	24
Measles			3	413	259	157	30	6	22	890
Mumps	1	15	5	219	384	93	283	34	408	1,442
Pneumonia		5			9	2			38	54
Poliomyelitis				1						1
Scarlet fever	10	27	10	119	228	23	99	47	32	595
Trachoma									1	1
Tuberculosis		30	7	147	56		3		32	275
Typhoid and paratyphoid fever		1		13	6	1	5		1	27
Undulant fever				2	3					5
Whooping cough				210	70	1		5	84	370
Other communicable diseases		5		4	244	34	2	1	1	291

SWEDEN

Notifiable diseases—March 1942.—During the month of March 1942, cases of certain notifiable diseases were reported in Sweden as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	13	Scarlet fever	1,506
Diphtheria	70	Syphilis	36
Dysentery	145	Typhoid fever	4
Gonorrhoea	738	Undulant fever	7
Paratyphoid fever	10	Wall's disease	1
Poliomyelitis	4		

REPORTS OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER RECEIVED DURING THE CURRENT WEEK

NOTE.—Except in cases of unusual prevalence, only those places are included which had not previously reported any of the above-mentioned diseases, except yellow fever, during the current year. All reports of yellow fever are published currently.

A cumulative table showing the reported prevalence of these diseases for the year to date is published in the PUBLIC HEALTH REPORTS for the last Friday in each month.

(Few reports are available from the invaded countries of Europe and other nations in war zones.)

Typhus Fever

Bulgaria.—During the week ended May 2, 1942, 57 cases of typhus fever were reported in Bulgaria. For the week ended April 25, 39 cases were reported.

Hungary.—During the week ended May 16, 1942, 35 cases of typhus fever were reported in Hungary.

Iraq.—During the week ended April 18, 1942, 7 cases of typhus fever were reported in Iraq.

Morocco.—During the week ended May 9, 1942, 1,021 cases of typhus fever were reported in Morocco.

Rumania.—During the week ended May 16, 1942, 141 cases of typhus fever were reported in Rumania.

Spain.—During the week ended April 25, 1942, 34 cases (11 in Madrid and 12 cases in Barcelona) were reported in Spain.

Yellow Fever

Brazil—Acre Territory.—Yellow fever was reported in Acre Territory, Brazil, as follows: 1 death on December 19, 1 death on December 27, and 1 death on December 28, 1941.

COURT DECISIONS ON PUBLIC HEALTH

City health officer—recovery of compensation—qualifying for office.—(New York Court of Appeals; *Ginsberg v. City of Long Beach*, 36 N.E. 2d 637, decided July 29, 1941.) The plaintiff sued to recover his salary as health officer of the city of Long Beach for the period from December 1, 1936, to February 28, 1938. The amount which he recovered in the trial court was reduced by the Appellate Division of the Supreme Court of New York and the case went to the court of appeals on his appeal only.

The court of appeals agreed with the appellate division's conclusion that the office was vacant after June 1936, because of the plaintiff's failure to qualify himself therefor in accordance with the directions of the public health council and that he was, therefore, entitled to no recovery for the period from December 1, 1936, to October 9, 1937. On the latter date the plaintiff was again appointed to the then vacant office on his fulfillment of the conditions imposed by the public health council, and for the period subsequent to this appointment the ap-

pellate division allowed him a recovery upon the basis of his salary as fixed by the city council in amounts which, for part of this period, were less than the minimum salary of a health officer prescribed by the public health law. The plaintiff contended that the city council had no power so to fix his salary, but the court of appeals was of the view that this contention was not open to him because he had failed, after his appointment on October 9, 1937, to file his official oath of office within the time prescribed by the public officers law. On that default, according to the court, the appointment was vitiated and the office again became vacant. "Plaintiff was thus entitled to no recovery for either of the periods in question and his complaint should have been dismissed. The defendant city cannot now have that relief, however, in view of its failure to appeal to this court."

The judgment of the appellate division was affirmed.

County health department—petition to submit question of establishment to voters—withdrawal of names of signers after expiration of time for filing.—(Kentucky Court of Appeals; *Commonwealth ex rel. Meredith, Atty. Gen., et al. v. Fife, County Judge of Hardin County*, 156 S.W.2d 126; decided November 11, 1941.) A Kentucky statute authorized the fiscal court to provide for the creation, establishment, and maintenance of a county health department with the proviso that "after such resolution is entered, the voters within thirty days may enter their protest against same by filing with the county judge a petition signed by twenty legal voters requesting that the establishment of such county health departments be done by the vote of the people of such county as herein provided." On February 10, 1941, a county fiscal court provided for the establishment of a health department in the county and within thirty days after that date a petition signed by twenty-six legal voters of the county was filed with the county judge. After the expiration of the 30-day period 7 of the signers of the petition withdrew their names from it and the question before the Court of Appeals of Kentucky was whether the county judge had the right to call an election.

The appellate court said that, if it upheld the right of the 7 persons to withdraw their names from the petition (the 30-day period having expired), the purpose of the election on the proposition of establishing a health unit in the county would be defeated and expressed itself as being of the view that common sense and fairness supported the conclusion that signers should not be permitted to withdraw their names from a petition calling an election when such action would defeat the purpose of the petition. "The county judge of Hardin County acquired jurisdiction to call the election when, after the expiration of 30 days, he had in his hands a petition signed by more than 20 legal voters. * * * We do not think that signers to

petitions calling elections should be permitted to oust the county judge of his jurisdiction under circumstances such as those involved in this case." The court then went on to say that the parties should not be permitted to mislead the advocates of the election into the belief that a good petition had been filed and that to permit them to withdraw their names after the time for filing the petition had expired would be putting the court in the position of sanctioning what might well be termed deception or even fraud. This it was not disposed to do. Public policy, said the court, demands otherwise.

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